

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

Reserve
A249.29
T68

Bush Files
BMT
7

ADMINISTRATION OF RESEARCH



For administrative use only

Agricultural Research Service
UNITED STATES DEPARTMENT OF AGRICULTURE

UNITED STATES
DEPARTMENT OF AGRICULTURE
LIBRARY



Reserve

BOOK NUMBER

914018

A249.29

T68



Administrative Assistant Secretary Ralph S. Roberts discusses Principles of Administrative Management
Panel Members:(left to right): H. A. Rodenhiser, R. S. Roberts, § F. H. Spencer.



Carnegie Institute's Richard Brooke Roberts discusses Research Planning. Panel members shown
(left to right): A. W. Brant, R. B. Roberts § G. W. Irving.

TABLE OF CONTENTS

| | <u>PAGE</u> |
|---|-------------|
| Foreword | 1 |
| List of Workshop Participants | 11 |
| List of Workshop Panel Members | 111 |
| Principles of Administrative Management | 1 |
| Research Planning | 5 |
| Budget and Finance | 13 |
| Research Standards | 17 |
| Personnel. | 21 |
| Research Training | 24 |
| Administrative Services | 29 |
| Research Supervision | 33 |
| Information | 37 |
| Research Coordination | 40 |

ACKNOWLEDGEMENTS

Plans for the Workshop were developed by the following committee:

Byerly, T. C. - Animal & Poultry Husbandry Research Branch
Chairman

Bridges, N. S. - Personnel Division
Secretary

Cullinan, F. P. - Horticultural Crops Research Branch

Hoffman, C. H. - Entomology Research Branch

Knipling, E. F. - Entomology Research Branch

Logan, C. A. - Agricultural Research Center

McKibben, E. G. - Agricultural Engineering Research Branch

O'Brien, Ruth - Home Economics Research Branch

Pate, W. W. - Soil & Water Conservation Research Branch

Salter, R. M. - Soil & Water Conservation Research Branch

Sharar, Earl D. - Horticultural Crops Research Branch

Simms, B. T. - Animal Disease & Parasite Research Branch

Weiss, M. G. - Field Crops Research Branch

Draheim, E. R.- Office of Personnel

Coordinator in cooperation with the Secretary's Committee on
Training in Administrative Management

FOREWORD

The Beltsville TAM Workshop was conducted in accordance with the policy of the Department to provide developmental opportunities in Administrative Management for program and administrative employees with demonstrated managerial potential.

In planning this workshop, the committee recognized the relative importance of both line and staff functions in the effective administration of research programs and arbitrarily established the ten general areas for program consideration. At this point, the workshop participants assumed an active role in planning the program and in identifying specific problems for program treatment within the general areas previously agreed upon.

Each workshop participant served either as a moderator or a recorder of one of the workshop sessions.

WORKSHOP PARTICIPANTS

| | |
|---------------------------------|--|
| Beach, Pauline W. | Human Nutrition and Home Economics Research Branches, ARS |
| Beatty, Clarence M. | Field Crops Research Branch, ARS |
| Brant, Albert W. | Animal & Poultry Husbandry Research Branch, ARS |
| Carlson, Raymond A. | Animal Disease & Parasite Research Branch, ARS |
| Cook, Harold T. | Marketing Records Division, AMS |
| Crooks, Donald M. | Field Crops Research Branch, ARS |
| Dawson, Elsie H. | Human Nutrition Research Branch, ARS |
| Geiser, Charles T. | Entomology Research Branch, ARS |
| Goldsmith, Margaret T. | Home Economics Research Branch, ARS |
| Hodge, Walter H. | Horticultural Crops Research Branch, ARS |
| Justice, Oren L. | Seed Branch, AMS |
| Krebs, William J. | Animal & Poultry Husbandry Research Branch, ARS |
| Lillard, Ray A. | Agricultural Research Center, ARS |
| McDuffie, W. C. | Entomology Research Branch, ARS |
| Madsen, L. L. | Animal & Poultry Husbandry Research Branch, ARS |
| Miller, H. F. | Agricultural Engineering Research Branch, ARS |
| Miller, Paul R. | Horticultural Crops Research Branch, ARS |
| Modlin, Lawrence W. | Horticultural Crops Research Branch, ARS |
| Moore, L. A. | Dairy Husbandry Research Branch, ARS |
| Neustadt, Morris H. | Standardization and Testing Branch, AMS |
| Parker, J. D. | Dairy Husbandry Research Branch, ARS |
| Parker, Marion W. | Field Crops Research Branch, ARS |
| Reynolds, Howard | Human Nutrition Research Branch, ARS |
| Rockey, John W. | Agricultural Engineering Research Branch, ARS |
| Rodenhiser, H. A. | Field Crops Research Branch, ARS |
| Schuttrumpf, Mildred J. | Agricultural Research Center, ARS |
| Sehorn, Hale F. | Agricultural Research Center, ARS |
| Sulzbacher, William L. | Eastern Utilization Research Branch, ARS |
| Spindler, Lloyd A. | Animal Disease and Parasite Research Branch, ARS |
| Woolrich, Avis | Home Economics Research Branch, ARS |
| Yuill, J. S. | Forest Insect Laboratory, FS |

WORKSHOP PANEL MEMBERS

Elting, E. C. - Deputy Assistant Administrator for Experiment Stations - ARS
Farrell, M. A. - Director, Pennsylvania Agricultural Experiment Station
Haller, H. L. - Assistant Director, Crops Research - ARS
Hanson, W. D. - Biometrical Services - ARS
Hinshaw, W. R. - Department of the Army, Camp Detrick, Maryland
Holden, J. B. - Division of Procurement and Property Management - B&F
Irving, G. W., Jr. - Deputy Administrator for Research - ARS
Johnson, Sherman E. - Director, Farm and Land Management Research - ARS
Joy, Barnard D. - Assistant to the Administrator, Research Advisory
Leffler, W. F. - Chief, Employment and Placement Branch - ARS
Mangham, F. R. - Director, Office of Plant and Operations - USDA
Moore, E. G. - Director, Information Division - ARS
Moseman, A. H. - Director, Crops Research - ARS
Quisenberry, Karl S. - Assistant Director, Crops Research - ARS
Reid, T. Roy - Director, Graduate School - USDA
Reynolds, Orr E. - Office of Naval Research - Department of the Navy
Roberts, Ralph S. - Administrative Assistant Secretary - USDA
Roberts, Richard Brooke - Carnegie Institute
Schafer, MacHenry - Director, Office of Personnel - USDA
Spencer, Frank H. - Assistant Administrator for Management - ARS
Starkey, J. S. - Director, Personnel Division - ARS
Stephens, Edmund - Director, Budget and Finance Division - ARS
Struttman, E. L. - Assistant Director, Budget and Finance Division - ARS
Sykes, A. L. - Chief, Classification and Wage Branch - ARS
Trelogan, Harry C. - Director, Marketing Research Division - AMS
Webster, R. Lyle - Director, Office of Information - USDA
Wheeler, J. C. - Director of Finance and Budget Officer - B&F
Williams, S. P. - Director, Administrative Services Division - ARS

PRINCIPLES OF ADMINISTRATIVE MANAGEMENT

MODERATOR

Herman A. Rodenhiser

PANEL MEMBERS

Ralph S. Roberts
Frank H. Spencer

DIGEST OF TALKS

Mr. Roberts (Principles of Administrative Management): Mr. Roberts paid tribute to the research people for taking leadership in efforts to improve concepts and methods of management through the means of this workshop. He prefaced his remarks with the statement, "It is rather rare that one finds a top-flight research man who is also a top-flight management man," then quickly followed by naming several outstanding men as exceptions. He pointed out that this situation was a natural consequence, since professional research people direct their skills and energy devotedly to their chosen fields of research, and administrative processes usually have little attraction for them. However, frequently these same people must assume management responsibilities which sometimes utilize their entire time.

Development of management an evolutionary process in government. Economic depressions, defense preparations, wars, inflationary developments, periods of uncertainty -- "cold wars" and "competitive coexistence" -- "these emergency conditions, largely unprecedented, have forced the Federal Government to improvise new organizations, new policies, new methods for dealing with the multitude of new problems, large and small, encountered along the way ... a great deal of experience has come to Federal administrators in the process."

1937 President's Committee on Administrative Management made five basic recommendations: (1) staff increase for exercise of the President's executive powers; (2) strengthen central managerial agencies, e.g., Bureau of the Budget and the Civil Service Commission; (3) extension of merit system to attract career service talent; (4) reorganize Executive Branch into a few large departments; (5) revise fiscal system to improve accountability of the Executive to Congress.

1949 Hoover Commission on "Organization of the Executive Branch" reported responsibility and accountability in government impaired because (1) authority was diffused, (2) lines of authority confused, and (3) staff services insufficient; and found management principles violated in eight major areas.

PRINCIPLES OF ADMINISTRATIVE MANAGEMENT

"... The Federal Government is expected to conform itself to recognized standards of administrative management applicable to other types of large-scale enterprise. Unless we know and practice those principles we fail to contribute to the public service the elements that gain and hold public respect for our administrative capacity ... we should welcome the cross-fertilization that gives the Federal Government the opportunity to benefit from the experience and resources of private business."

Charles E. Wilson's four word concept of administration.

1. Analyze - penetrate the facts and evaluate their significance.
2. Organize - division of labor for effective total job - staff and line services.
3. Deputize (or delegate) - getting results through others - discharge own responsibility through influencing others.

"A sound reason for delegation of authority is the fact that people working together should be free to contribute to the team effort without the hindrances encountered when action is contingent upon approval from a remote source, no matter how high."

4. Supervision - "Function of supervisors to review performance in terms of results accomplished, to secure adherence to objectives and plans, to assure the attainment of acceptable standards." Management supervision includes internal audit -- "Go see." -- which serves as eyes and ears of management -- provides a link between top level management and operating management -- between those who determine policy and program objectives and those who execute the policies and carry out the programs.

Legislative - Executive Relationships in Government -- problems solved through cooperation and close working relationships. Will to cooperate traditional in Department of Agriculture. "That cooperation, in part, means that we keep Congress informed of plans, progress, results; it also means that we keep faith with the intent of Congress in those things we are empowered to do."

Mr. Spencer (Policy - Its Purpose, Development and Acceptance):

Definition of Policy -

"Policy sets out guiding principles to govern actions to insure consistency under repetitive conditions."

PRINCIPLES OF ADMINISTRATIVE MANAGEMENT

"Policy is a statement of what is to be done. Administration is charged with the interpretation and execution of a policy. Procedure defines who does it, how it is to be done and when."

Policy can never be static or rigid, nor can it be constantly changing. It is more like a growing plant than a fixed landmark.

Origin of Policy in Government -

Broad policy in government originates generally through Congress, the President, Department heads and program administrators, public opinion, and the Courts.

Determination of Specific Policies -

Individual and specific policy is determined by top agency administrator, however, he is not altogether a free agent as he must operate within legal framework. He must allow latitude for adaption of policy to program by sufficient two-way communication between him and line officials. Policy should not be so stated that there is no opportunity for a reasonable amount of free thinking.

What Administrator Must Consider -

In determining specific policies the administrator must give consideration to text of applicable laws, legislative history and background, and avail himself of knowledge and experience of responsible staff members. Final decision is up to the administrator and his conclusion is his responsibility.

Policy Revision -

Policy should be periodically reviewed to keep current with conditions. Keep open lines of communications to people close to operations. They are often the first to know when a policy needs to be changed.

Expression of Policy -

Statement of policy should be in writing and should be in clear, concise, and simple language. There should also be oral discussion at various levels to explain why it was put into effect.

PRINCIPLES OF ADMINISTRATIVE MANAGEMENT

Application of Policy -

Policy is of more concern to some than to others but no one is exempt, and no one may ignore a policy with which he does not agree. Anyone has a right to recommend changes but if recommendation is not accepted the policy remains in effect.

Close Relation of Policy to Program -

Program objectives must be in line with policy, and program operators must have clear understanding of policy. Must avoid becoming mechanical in fixing and observance of policy.

Acceptance of Policy -

To succeed, any policy must be accepted by staff and by the public. Most important single element is that policy must commend itself to reason. It must appeal to creative ability of employees. Ability of staff to participate in policy provides better acceptance.

GROUP DISCUSSION

The discussion brought out that probably there is need for more intensive effort to develop management concepts in the research field than in some others. There is a tendency for research people to become so immersed in their own work that they find little time to develop as administrators. In research at the supervising level, there is responsibility in the field of management as a part of the job.

Issuances concerning policy and procedure should be of a frequency and scope to keep all levels sufficiently informed. It is desired that they be distributed only to points that have concern in the subject matter without reissuance at successive administrative levels.

It is important to obtain rapid flow of necessary information from top level to lowest level.

Basically most effective decentralization occurs when program as well as management is also decentralized. A decentralized operation will, in general, be more efficient but also more expensive than a centralized one. Cooperation of various entities which comprise an organization is better obtained when there is a thorough understanding of program and problems.

RECORDERS -- Donald M. Crooks, Ray A. Lillard

RESEARCH PLANNING

MODERATOR

Albert W. Brant

PANEL MEMBERS

Dr. Richard Brooke Roberts
Dr. George W. Irving

DIGEST OF TALKS

Dr. Roberts: Dr. Roberts sketched an interesting picture of research in an endowed institution where, because investigations tend to be primarily concerned with basic problems of science, the techniques of management, project planning, and project control present a sharp contrast to management methods that are found necessary in a research organization such as the Agricultural Research Service. The flexibility of the Institute's program was illustrated by Dr. Robert's own research which, before the war, was in the area of nuclear physics and, subsequent to the war, shifted sharply to biological investigations of protein synthesis involving studies of the metabolism of microorganisms. He pointed out that such flexibility requires, and the institutes program allows for a considerable amount of continuous self-education of staff members.

Salient Points

1. There are four types of research, all are essential to scientific progress and each requires a different type of investigator. A research man may be successful in one type and unsuccessful in another. These types of research serve the function of:

- a. Turning up a mass of data which may, for example, provide the basis for new theories, revision of old, systematizing and classifying knowledge in an area of science.
- b. Obtaining decision results which provide categorical answers to questions, prove or disprove theories.
- c. Correcting through critical probing and finding errors in the work of other investigators.
- d. Synthesizing of diverse separate and sometimes superficially unrelated findings of others into a unified picture or philosophy.

2. Both basic and applied research serve essential functions in scientific development but the financial value of basic research should not be discounted because such potential values are not likely to be apparent in the planning stages and may not arise immediately from the results.

RESEARCH PLANNING

This point was illustrated by examples of fundamental research at the Carnegie Institution which, without having these objectives as goals, provided the basic data required for the development of hybrid corn, pyrex glass, and radar. The economic value of these findings, Dr. Roberts felt, would provide financial justification for the research of the Institution for a considerable future period even in the absence of subsequent findings of economic value.

3. The difference between basic and applied research is one of goals rather than methodology and what is done. In general, each of the four types of research outlined above can be either basic or applied. The objective of basic research is the determination of new facts, the extension of knowledge beyond present boundaries. Applied research makes use of available facts and knowledge and applies them to the development of new or improved products, methodologies, animal or plant species, i.e., the development of new products of value or adding to the value of old.

4. Difference in goals between applied and basic research is reflected in planning and flexibility of research program. In applied research, since a definite goal is the objective, more specific planning is possible and the time element is amenable to approximation. In basic research the investigator must be permitted to follow promising side lines not contemplated in the original plans. Thus, instead of definite long range planning possible in applied research, planning in basic research must be a continuing function which develops on the basis of experimental results as they are assembled and evaluated. For this reason, plans for basic research must grow from the investigator up, rather than being imposed by the director. If the director wishes to initiate work in another direction his best approach is often to bring in one or more men with ideas and interests in areas he wishes to promote.

5. Other observations on basic research.

- a. A successful program requires selection of problems that offer promise of significant progress and at least one investigator who is, or can develop enthusiasm for the research.
- b. Good research requires a continuity of attention and is not compatible with frequent interruption to handle paper work.
- c. Optimum size for a research group depends on size of the problem but 4-6 investigators are usually sufficient. A large group may defeat its purpose. The minimum size is two because more than one is needed to provide for abrasion of ideas.
- d. It is well for the investigator to do a good deal of the

RESEARCH PLANNING

research personally so as to be in a position to observe, examine, and interpret results directly. Significant observations may be overlooked if assistants are depended on to note and report them.

Dr. Irving: Dr. Irving presented a well-planned discussion on research planning emphasizing primarily the organization of research in the Agricultural Research Service, U. S. D. A. He introduced his talk with a list of five significant aspects of government research and its administration, i.e., why the government does research, how the government determines the objectives and scope of research, how research problems are selected in relation to limited funds available, how long should research projects continue, and special problems of government research and government research workers.

Salient Points

1. Why the government does research.

In industry the profit motive is the prime mover determining both the type of research worker and the plans and objectives of research. Government research is primarily planned on the basis of obligations to the country and to the people to provide solutions for important national problems. Government research in agriculture is motivated therefore by:

- a. Problems that are not profitable for private enterprise to undertake nor generally attractive to state or local groups. An example of this type of research is Federal research on control of "foot and mouth" disease.
- b. Pressures for solutions to problems where the cost of the research or returns anticipated do not tempt participation by other groups, for example, investigations designed to provide new and expanded uses for surplus grains.
- c. Demands for answers to questions where the results will be generally accepted with greater confidence when the research is done by government agencies, such as evaluation of soil conditioners, testing of insecticides, and evaluation of the nutritional value of butter as compared with other fats.

RESEARCH PLANNING

- d. Production factors which threaten the economic condition of a group of people. Examples of this type of research are studies directed towards increasing utilization of cotton through the development of products that will place it in a more favorable competitive position with the many new miracle fabrics that have taken over much of the former market outlet for cotton, and the development of new uses for vegetable and animal fats to relieve the pressures of surpluses of these commodities which are threatening the economic position of their producers.
 - e. The necessity to provide a potential supply of essential materials and commodities, not normally produced in this country but likely to be needed in emergencies, i.e., rubber, castor oil, and tannins.
 - f. The importance of maintaining a repository of knowledge, of techniques, and of skills, in the minds of scientists which will be available to the nation in times of emergency.
2. How does the Department of Agriculture determine the objectives and scope of research to be undertaken?
- a. The scope and objectives of research are ultimately determined on the basis of statutory authorization defining the areas of responsibility of the United States Department of Agriculture. Primarily, this research is directed by law to the solution of problems which will be a benefit to farmers, ranchers, and other field of agriculture.
 - b. United States Department of Agriculture research should be directed toward the solution of problems which are national in scope leaving those which are primarily local in nature to State research agencies. Many problems, however, such as those concerned with plant and animal diseases, insect control and quarantine, and surplus commodities, do not respect state lines and therefore fall within the purview of the Department of Agriculture.
 - c. Basic vs. applied research. In agricultural research we must generally think of all broad investigation as applied research since the overall authorization of the department requires that research be directed to the solution of problems which are important to the farmer. Basic research is an important part of the conduct of applied research, but is normally found in seg-

RESEARCH PLANNING

ments of the overall applied research projects.

3. How does the department of Agriculture select research problems to be undertaken in a manner that will make most efficient use of available funds? In the selection of research the planner must depend on several factors.
 - a. Experience; his own, that of superiors, and that of others in the Department of Agriculture. He must have confidence in the skills and abilities of departmental personnel.
 - b. Knowledge of available skills and facilities. The planner should know at all times, what is available in terms of personnel and facilities for conducting proposed research. This should include knowledge of techniques for developing cooperative and contract research - these provide a means for expanding departmental facilities, techniques, and personnel. An example of such expansion of facilities is contract work underway on sterilization of foods by irradiation. This makes available, for use in the department program, electron accelerators and gamma ray sources, expensive equipment not owned directly by the department. He must also consider the various pressures for conduct or completion of research in specific areas.
 - c. Outside advice. Research planning in the U. S. D. A. is and should be guided also by outside advice such as that provided by Departmental research advisory committees, by collaborators on specific technical problems, by liaison with other government agencies, by information gained through attendance at meetings of scientific societies, and by visits to other laboratories and research agencies and with scientific visitors.
4. Research projects and their time span. Work and line projects are a necessary part of a well organized research program. Short term or line projects are generally part of a long term project of indeterminate duration and often determined on years ago.
 - a. The long term financial and work projects in the Department of Agriculture always represent and will probably continue to deal primarily with applied research. An example of the manner in which a broad project may break down was given as:

RESEARCH PLANNING

More efficient production of livestock (long range financial or work project)

Improved pasture efficiency

Development of better legumes

Development of improved alfalfa varieties

Development of alfalfa with lower saponin content

Determination of saponins

Chromotography of saponins

(Basic research often develops in or becomes a necessary part of these smaller units of work.)

- b. Flexibility and the project system. The project statement outlines work to be undertaken for the solution of a problem of importance to agriculture. It should, however, be flexible enough to allow for judgement of and recommendations by the individual research worker and for change of emphasis when results indicate the planned investigations are not likely to be productive.
- c. Reporting: The project system operates as a reporting system as well as a method of directing research. It assists in the preparation of requests for funds for further research because such requests stand a better chance of approval if it can be pointed out that project reports show that work has been completed on some area of the problem.

5. Special problems of government research and government research workers.

- a. Program flexibility. Government is often criticized because its research program is not flexible enough to expand rapidly with the advent of new problems or to contract efficiently when major aspects of work on a particular problem have been completed. In general, government research is no more or less flexible than other research but this often does not appear to be so to the taxpayer.
- b. Maintenance of staff. It is important that government research agencies maintain a good nucleus of research talent in order that other talented investigators may be attracted to government service.

RESEARCH PLANNING

- c. Recruitment. It is important that well trained and able young graduates be encouraged to enter government service.
- d. Recognition of accomplishments. It is important that full recognition be given to research workers by way of publications and by other mechanisms for providing credit in the eyes of the public for the work of the research scientist.
- e. Pressures from industry. Government is frequently under pressure by industry to curtail or stop work on projects when they are almost completed and show signs of developments that will be economically valuable. At this stage industry is often interested in carrying the project to completion. A cited instance was the development of frozen orange juice concentrate, largely developed by the United States Department of Agriculture but carried to completion under the auspices of industry. Under these circumstances, the department does not get adequate credit for its part in development of the final product.

GROUP DISCUSSION

In consideration of the problem of basic vs. applied research it was generally agreed that approval of a broad basic research project, i.e., one that is not justifiable in terms of objectives having practical applications, is unlikely in the Department of Agriculture. Basic investigation must usually be worked in as part of smaller units of work, i.e., the line projects. Plans for basic research are generally not included in statements to Congress. Selling of projects to Congress is generally most successful when based on the appeal of practical problems that require solution. However, the publication in scientific journals of Departmental research, along with that from the universities, colleges, and research institutes, provides a measure of the not inconsiderable amount of attention given to basic research by investigators in the U. S. D. A.

Commodity Committees. These committees exert considerable influence on the department's research program and particularly in establishing the areas of research to be emphasized. To an extent they have tended to perform the function of arranging in order of priority projects that were suggested by department specialists. This function, however, has served frequently to eliminate from the program projects which appear to the committees to be of minor potential value.

RESEARCH PLANNING

In discussion of length of projects it was emphasized that it is generally much easier to sell Congress on short term projects which can show progress than on long term projects which may provide no specific results for periods of several years. Some projects, however, for example any depending on natural conditions, may necessitate indicating an indeterminate time for completion. In general, work projects are long-term and indeterminate while line projects should be reasonably determinate segments of the long-term projects.

There is general tendency for Congressional support to narrow whereas research progress is generally expanding. This presents problems in obtaining financial support for such research. For selling such expanding research programs to Congress, it is best to plan, if possible, for breaking them into aspects which will provide for successive steps that sound different and which individually can show results or be terminated with definite findings.

The departmental project system creates definite problems which limit flexibility in research programs. Pursuit of an approved research project should not be continued when results indicate little or no likelihood of success or that a different approach would offer greater promise of success. Such a project should be revised or discontinued and replaced by a new project, but it may be impossible to keep project accounting abreast of an active research program and in line with project thinking. The present project system is often too cumbersome to permit such currency but at this time there is no apparent solution to the problem.

Program planning must often be developed to some extent on the basis of available personnel and competences. In general, however, the planning of new or expanded research programs should take into consideration overall ARS facilities and personnel as well as facilities and personnel that can be made available through contract authority.

RECORDERS: Charles T. Geiser, Howard Reynolds

BUDGET AND FINANCE

MODERATOR

W. J. Krebs

PANEL MEMBERS

J. C. Wheeler
Edmund Stephens
E. L. Struttman

DIGEST OF TALKS

Mr. Wheeler: Mr. Wheeler began his talk by giving the framework at the Departmental level of budget formulation and execution in the Office of Budget and Finance. The Office of Budget and Finance consists of approximately 100 people, and this office reports to the Administrative Assistant Secretary. A major function of this office is to assist the Secretary and other agencies of the Department in development and execution of the departmental budget, and fiscal and property management aspects of program operations. A review of legislative history pointed up the role of Congress in controlling income and expenditures and its impact on budgetary administration in Government, although during the past 25 to 30 years a trend has developed toward the delegation of more responsibility to the Executive branch. This was illustrated by the fact that the appropriations in the Department have been reduced in numbers by consolidation from 137 items in 1941 to 44 in 1955.

Sequence in the Formulation of the Budget at the Departmental Level

Preliminary estimates submitted (about May) from agencies to the Office of Budget and Finance.

Summarization and screening of preliminary estimates and determination of "first asking."

Informal conferences resulting in a determination of departmental ceiling by the Bureau of the Budget (early July).

Department policy makers and agency heads adjust estimates to fall within the established ceilings.

Department estimates submitted to the Bureau of the Budget (September 15).

Bureau of the Budget hearings.

Director of the Bureau of the Budget reviews the tentative budget with the President (November).

President's budget submitted to Congress in January.

BUDGET AND FINANCE

Congressional hearings including House-Senate conferences.

Passage of the Appropriation Act.

Signature of the President.

Allotment and Project Procedure

Submission of project obligation estimates reflecting replanning and rescheduling of work necessitated by Congressional action and internal changes in program.

Apportionment of funds as required by the Anti-Deficiency Act, as amended in 1950.

Mr. Stephens: Mr. Stephens began his talk by showing how the Budget and Finance Division fits into the Agricultural Research Service organization, and the Division's responsibility in the preparation and execution of the budget. Preparation of branch estimates is the responsibility of the branch chief, subject to general guidance as to policies from the Administrator acting through Directors. These estimates are determined after review and appraisal of current work programs with project leaders, cooperating agencies, farm and agricultural industry organizations, Congressmen, Advisory Committees, and others.

Sequence in the Formulation of the Budget at ARS Level

Departmental officials meet with the 24 commodity and cross-commodity Advisory Committees to review current program needs (January to March).

Branch chiefs review estimates and Advisory Committee recommendations with section heads and project leaders.

Branch estimates formalized into simple format giving justifications showing problems and needs for work (middle of April).

Branch chiefs appear before the Assistant Administrators and Directors to justify their estimates.

Directors submit to Administrator priority lists.

BUDGET AND FINANCE

Preparation of preliminary agency estimates.

1. Branch estimates revised.
2. Agency estimates reviewed by Budget Review Committee for the Secretary, Assistant Secretary, Assistant Administrator for Management and Budget Office.
3. Estimates justified by Administrator and Directors.

Preliminary Agency estimates submitted to Office of Budget and Finance (about May).

Budget Execution

Determination of allotments and apportionments immediately after passage of Appropriation Act.

Preparation of operating budgets by branches (preferably in July).

Budget and Program reporting.

Mr. E. L. Struttman, Assistant Director, Budget and Finance Division, in charge of Finance Branch, gave a brief review of the problems encountered in the merging of seven Bureau accounting systems. He also outlined the present structure of his branch.

GROUP DISCUSSION

Points brought out are as follows:

Investigations of violations of the Anti-Deficiency Act disclosed that they were not of an intentional nature. The causes were primarily due to misunderstandings of the accounting systems, which led to corrective measures in this field.

Allottee responsibility is desirably placed at as high a level as possible, preferably in the Office of the Branch Chief.

Individuals at operating levels are responsible to the allottee for remaining within their quarterly administrative sub-division of funds, which is necessary for higher level control.

BUDGET AND FINANCE

Difficulties experienced with the Anti-Deficiency Act have resulted in the appointment of a Congressional subcommittee to review the apportionment system.

To perpetually maintain the accounting records of ARS on a current obligation basis, lump-sum obligations are used in addition to formal documents.

ARS administration costs vary with the type of branch organization. Over the past few years the trend has been toward increased administrative costs largely resulting from additional responsibilities established by law, such as: Quarterly apportionment system, payroll requirements, etc.

In respect to the Research Center's capital working fund, no authority exists for advance payments to that fund.

Bureau of the Budget officials and Department budget officers assigned to review ARS budget estimates make periodic field trips to keep themselves familiarized with ARS programs.

RECORDERS: H. J. Sehorn, C. M. Beatty

RESEARCH STANDARDS

MODERATOR

Oren L. Justice

PANEL MEMBERS

Dr. Harry C. Trelogan
Dr. W. R. Hinshaw
Dr. W. D. Hanson

DIGEST OF TALKS

Dr. Trelogan: Standards commonly applied to agricultural products are (1) standards of identity, (2) minimum quality standards and, (3) quality grade standards. Such a classification may be applicable to research but with certain distinctions. Research must be based on judgment of intangible qualities of relevancy, logic and coherence rather than on objective tests or judgments used in rating commodities. We, therefore, are prone to substitute faith for judgment in evaluating research - faith in the men or the institution. Judgment of the man must be distinguished from judgment of research. To obtain background for judging research we may need to depend on written or oral communications. Those who propose research, therefore, must be able to communicate their objectives, thinking and plans.

Standards must differ for different types of research; e.g., exact sciences compared to biological sciences and theoretical research compared to applied research requires different standards of identity.

Minimum quality standards include such factors as integrity, objectivity (inductive and deductive reasoning), selection of pertinent problems, consistency with legislative authority and organizational function (integration by means of the project system).

Quality grade standards deal with the following: Is the problem important? Does the research attempt to fill important gaps in knowledge? Will it enhance economic well-being? What will be the cost? Judgment on a plan also must take into account what is available with respect to equipment, facilities, and quality and quantity of talent available. Then there is the factor - probability of success. This can be evaluated to a certain extent by examination of the proposed methods, the logic presented, the coherence of the whole plan, and whether it presents a biased approach. Evaluation should be based on judgment by contemporaries as well as superiors. Generally, coordinated research is more productive than individual research, although, this may not apply to some types of basic research.

RESEARCH STANDARDS

The following formula was given as a guide for evaluating quality:

$$Q = \frac{V \times P}{C} - T$$

When Q = quality of project

V = value of the work

P = probability of success

C = cost

T = time required for completion

Two examples (omitting T) were given to illustrate V and P.

1. High value long shot

$$1 = \frac{1,000,000 \times .01}{10,000}$$

2. Lower value with higher odds

$$1 = \frac{20,00 \times .5}{10,000}$$

Dr. Hinshaw: A serious problem in research administration may arise from the so called "crash" program. A balanced program is progressing satisfactorily when - suddenly all energies must be diverted to an emergency investigation. Such changes not only disrupt going research, they also are costly and frequently result in dissatisfaction and loss of the most capable personnel.

Another problem is the evaluation of biological and physical research by people trained primarily in such fields as statistics, budget or fiscal. Such evaluations cannot be accurate or equitable.

A third problem affecting sound research progress is that of fluctuating support. The best research is done when funds, equipment, personnel and organization remain stable.

Dr. Hanson: Biometrical Services, a unit directly responsible to the Administrator, is composed of four specialized groups: Plant Industry (including Entomology), Animal Industry, Utilization and Mathematical Statistics. The function is to assist other ARS units in statistical phases of (1) experimental design, (2) analysis of data, (3) project statements and (4) manuscript review. It was stressed that this service is available on request

RESEARCH STANDARDS

but is not forced on any unit. In addition to rendering short-term consultation, the statisticians may cooperate in research programs so that (1) experimental findings and statistical aspect are published under joint authorship or (2) purely statistical aspects may be carried on as a parallel study and published separately.

GROUP DISCUSSION

The following points were developed:

In planning a research program it is important to maintain a proper balance between basic and applied research: basic research to meet anticipated needs, applied research to meet current needs.

The proportion will depend on the particular program. It is advisable to organize research line projects or units that can be completed within a comparatively short period. Although progress in research usually opens up many new problems, by holding to a succession of short-term projects, progress is more readily apparent to the recipients of the research and other laymen.

There was strong expression for the importance of avoiding "crash" research programs or shifting emphasis or priorities of lines of research within a program.

At several times during the discussion, emphasis was placed on (a) establishing a definite objective for a given line of research, (b) keeping the work pointed to the objective, but (c) providing flexibility so that objectives may be changed when progress so indicates.

Some observations on rating or evaluating proposed research: (a) Different individuals place different value on a given program. Research workers tend to emphasize basic research; administrators tend to evaluate in terms of organization, budget and personnel; recipients consider in terms of the direct benefits and therefore tend to emphasize applied research. (b) Value is based on the objective and the value may change as the objective changes. (c) Value is not only the money value of the results to be obtained, but also the value of how the results may help in solving problems in another field.

Several comments emphasized the importance of making the research worker a participant in all stages of program, including planning and evaluation, as a means of developing high morale, productivity and value of the individual to the program.

RESEARCH STANDARDS

Some observations on the use of statistical methods: (a) More research should employ statistics in experimental design as well as for analysis of data; a good statistician cannot get answers out of data from a poorly designed experiment. (b) Statistically sound procedures, particularly in sampling methods, can reduce the cost of research. (c) The investigator does not need to be an accomplished statistician to avail himself of assistance from the statisticians; i.e., Biometrical Services.

RECORDERS: J. B. Parker, J. S. Yuill

PERSONNEL

MODERATOR

Elsie H. Dawson

PANEL MEMBERS

MacHenry Schafer
J. H. Starkey
A. L. Sykes
W. F. Leffler

DIGEST OF TALKS

Mr. Schafer: Instead of making a talk on the Principles of Personnel Administration, the subject matter of which can be obtained from text books, Mr. Schafer conducted an interview with one of the participants to develop certain points of interest which would benefit the audience as well as prove to be an education for himself. He stated that in finding out something about this man we could abstract from his experience some of the principles of personnel administration and look at ourselves and our activities at a distance.

Information was developed as to place of birth, schools attended, educational interests, teacher preferences and their effect on subject interests, work experience while completing his education and after obtaining his PhD, prior to acceptance of a position with the Department of Agriculture.

The Department offer was accepted on the promise that it would afford him practically full time to continue research in drug crops and would entail a minimum of paper work, probably not more than an hour a week.

At this point a problem developed. A person who was basically research minded and expected to continue research work was called on to head up a section which required practically full time in administrative management and paper work, leaving little time for research. "Another research man gone wrong." It did prove to be a challenge to him.

One of the chief personnel problems for the supervisor is to get the right man in the right place. It is usually easier to get definite information as to technical qualifications than personality traits. Will he fit into the job - can he work with people? This is more critical than his scientific skills.

After selection of one of three eligibles, what happens if he does not fit? Two examples discussed pointed out problems of misplacement. One, a young man somewhat of an individualist with a PhD who desired great latitude in his work, was placed under the supervision of an older, more conservative man who did not have a PhD degree. There was lack of cooperation,

PERSONNEL

due in some degree to the difference in status and a difference in personalities. The second problem was caused by a misunderstanding, incompatibility of two people, and human differences.

People vary and differ in their desires for other human contacts, there is no one-way street in dealing with them. Some like to work alone, others in groups. The praise angle also enters into the picture. Recognize the problem, get the facts, who are the people involved, what is the true situation. Get to know all you can about the people who work for you. The more the supervisor knows about his people, the more effective he will be, the more he can motivate people.

There is the problem of interviewing, counseling, advising, and helping. The key is in facing people as individuals and in groups. Let the other fellow do the talking and do not become emotionally involved. Direct the interview, but do no more. Do not build barriers between you. Emotion communicates readily and may hinder your chances of accomplishing anything.

A supervisor should have a personality that attracts people - show interest in them. Their problems are yours and your responsibility.

Mr. Starkey:

Organizational Background

The Agricultural Research Administration was a coordinating unit, all Bureaus were separate. Under the reorganization, all research work was placed under the Office of the Administrator and the Administrative Management offices were taken away from Bureau Chiefs and research people to give them greater opportunity for research. We have four units of specialized groups - Personnel, Budget and Finance, Administrative Services and Information. Previously these units were relatively small, but now the work is concentrated. Many decisions had to be made in terms of expediency. The fundamental shift came about through the fact that these units report directly through the Assistant Administrator for management to the Administrator. The Personnel Division is divided into five sections, namely, Classification and Wage Branch, Employee Development and Safety Branch, Employment and Placement Branch, Investigations Branch, and Organization and Methods Branch.

GROUP DISCUSSION

A greater amount of checking has to be made now on people recruited from Civil Service registers which slows down the processing of an action. Mr. Leffler said a study was made for a period of three months on all actions

PERSONNEL

that went through the employment section. It was found that the average time for all employment actions was about $18\frac{1}{2}$ days from the time the action was received until the Branch concerned was notified of approval. Thirty days is required for actions needing approval from other sources. About 45% of all actions were approved in less than 20 days. The range was from one day to four months. Promotion actions took from 18 to 19 days to reach the approval stage.

Mr. Sykes indicated that position descriptions should never be looked upon as a restrictive type of thing, and that any time an organization needs to be changed, people should get together and have it changed.

A question was asked as to having a general job description rather than a specific one. Mr. Sykes answered that the ultimate end of this procedure would be to do away with job descriptions entirely, and the Civil Service Commission would find this procedure to be inadequate. Position descriptions and format are something that will never be agreed upon by all units or departments involved. The position description is intended to be descriptive and can be changed at any time.

Performance standards are a function of the Employee Development and Safety Branch.* If a person is rated Outstanding one year, he can be rated Satisfactory the next year.

In order to keep industry from taking our research people and undermining our foundation, the research staff should be reviewed annually and recommendations should be made for those who have reached a standard for promotion.

One of the problems in getting a person with a PhD is that by the time that person gets on the Civil Service register, he already has been approached by private industry. However, the Agricultural Scientist examination is being revised and a request is being made to the Commission to approve the rating of prospective graduates at least six months before the graduation date; the employment office then would be in a position to see this register before the graduation date and therefore could get "in" at least at the same time as Industry, if not earlier. Transcripts, publications and personal references will be submitted with the application to help in the selection of the right person for the job.

RECORDERS: Mildred J. Schutrumpf, Pauline W. Beach

*Written standards are not mandatory but performance requirements should be made known to the employee.

RESEARCH TRAINING

MODERATOR

Lane A. Moore

PANEL MEMBERS

T. Roy Reid
Dr. Karl S. Quisenberry

DIGEST OF TALKS

Mr Reid: Introduction was made by listing three requirements for a research worker that have always seemed to rank at the top:

1. A highly trained mind is necessary which is a possessor of many facts, knows how to probe for facts not yet established, understands how to fit the facts together and how to report them so others can understand them.
2. A well-disciplined mind that follows facts where they may lead and discard prejudices.
3. An alert and diligent mind as to the deviations that may come in the pursuit of facts and to follow facts when it may become tiresome and seemingly futile to do so.

Mr. Reid discussed research training under four major headings:

I. College Training for Research

College and university training is a means of learning the facts that have already been established. Just what the curriculum of colleges and universities should be for best preparing beginning research workers has long been a question. The Department of Agriculture and the Association of Land-Grant Colleges and Universities have an active joint committee working on requirements of training for government service. A broad rather than specialized training prior to the undergraduate degree and training in understanding the administrative processes are two things of major emphasis this committee has stressed.

A good knowledge of speaking and writing is a most valuable asset and can most easily be acquired in youth, in high school or university.

II. Education and Training, A Lifetime Need

The need for continuing education and training is apparent to the alert and competent as they gain experience. This may be accomplished by the following ways:

RESEARCH TRAINING

1. Professional Society activities.
2. Staff conferences and seminars.
3. USDA Graduate School.
4. College or university courses given at night or during special hours.

III. In-Service Training

This type of training may be accomplished by supervisor, on-the-job, training. Scientific and technical workers need to gain through in-service training, the best information on how to use aides and staff so as to devote maximum energy to their research work.

IV. Developing Consciousness of Training Needs

Supervisors may develop a consciousness of need and desire to meet the need for continuing education and training by:

1. Developing interest himself.
2. Participating in Professional Society activities.
3. Keeping opportunities before employees.
4. Aiding employees who do extra training.
5. Working with groups on training plans.
6. Counseling with individuals.

Dr. Quisenberry: A quote was given from a statement by Professor Harold H. Smith of Cornell University that, "The individual is dropping behind at an accelerating rate in his grasp of 'all there is to know.' The only possible way to transfer this knowledge through the generations is by education, by learning."

Education and training were discussed under six broad headings:

RESEARCH TRAINING

I. High School Training

Research workers should be encouraged to concentrate in high school on mathematics, English, chemistry, physics, history and foreign language, preferably Latin. The student should be as well trained basically as possible but at the same time not be encouraged to become too narrow.

II. College

Potential research workers should continue to concentrate in courses such as mathematics, chemistry, physics, botany, zoology, physiology, genetics and English. Specialization in fields of real interest and aptitude should be made during the junior and senior years. Some so-called practical courses such as livestock judging, grain judging, wood working and blacksmithing would be desirable. Reading in broad fields should be encouraged as much as possible.

III. Graduate Training

1. Select school for training wanted.
2. Take courses in major and further basic courses.
3. Split minor to get broad training.
4. Do research using sound methods.
5. Write thesis using correct writing.
6. Do outside writing if possible.
7. Would recommend becoming proficient in one foreign language rather than waste time on two or three.

IV. Experience

It is desirable that the student have a farm background or work as a field or laboratory assistant in the summer if he is to enter the agricultural field. Using students as assistants is a good practice. The assistants who show aptitude for research can be encouraged to take further training. Good assistants should be encouraged to progress and not be held back for selfish reasons by a teacher or research worker.

RESEARCH TRAINING

A quote from "50 Years of Graduate Education at Wisconsin" pointed out the importance of young students. "The enthusiasm and originality of young men and women who are learning to make successes of difficult and time-consuming projects, and freedom of inquiry which is possible in an academic institution, make the investigations of basic problems more easily undertaken than elsewhere - basic research is the raw material upon which all progress depends."

V. Employment

One of the difficulties of hiring the right man at the right time is that he must have passed a Civil Service examination and be well up on the list. Agent appointments are one method, if not abused, to aid in employment.

Employees may often come with completed graduate training but with no experience. The speaker preferred that they have experience or that they be hired after completing undergraduate work. The employee can then be encouraged to take graduate work at cooperating colleges or universities. In this way, both the Government and student benefit from research done during graduate study. He believes that by interspersing training with experience the man would get more out of the course work.

VI. Post Graduate Training

1. Encourage individuals to take refresher courses.
2. Develop something in Government comparable to sabbatical leave used in many States.
3. Encourage employees to take part in college or university teaching or graduate advisor programs for special courses or in evenings.

GROUP DISCUSSION

It was pointed out that it was difficult for most young men to take time off for additional training after once getting a job and family because of financial reasons.

Government can only send men to short courses while in pay status.

RESEARCH TRAINING

Employees can take courses at Universities by taking leave or changing tour of duty.

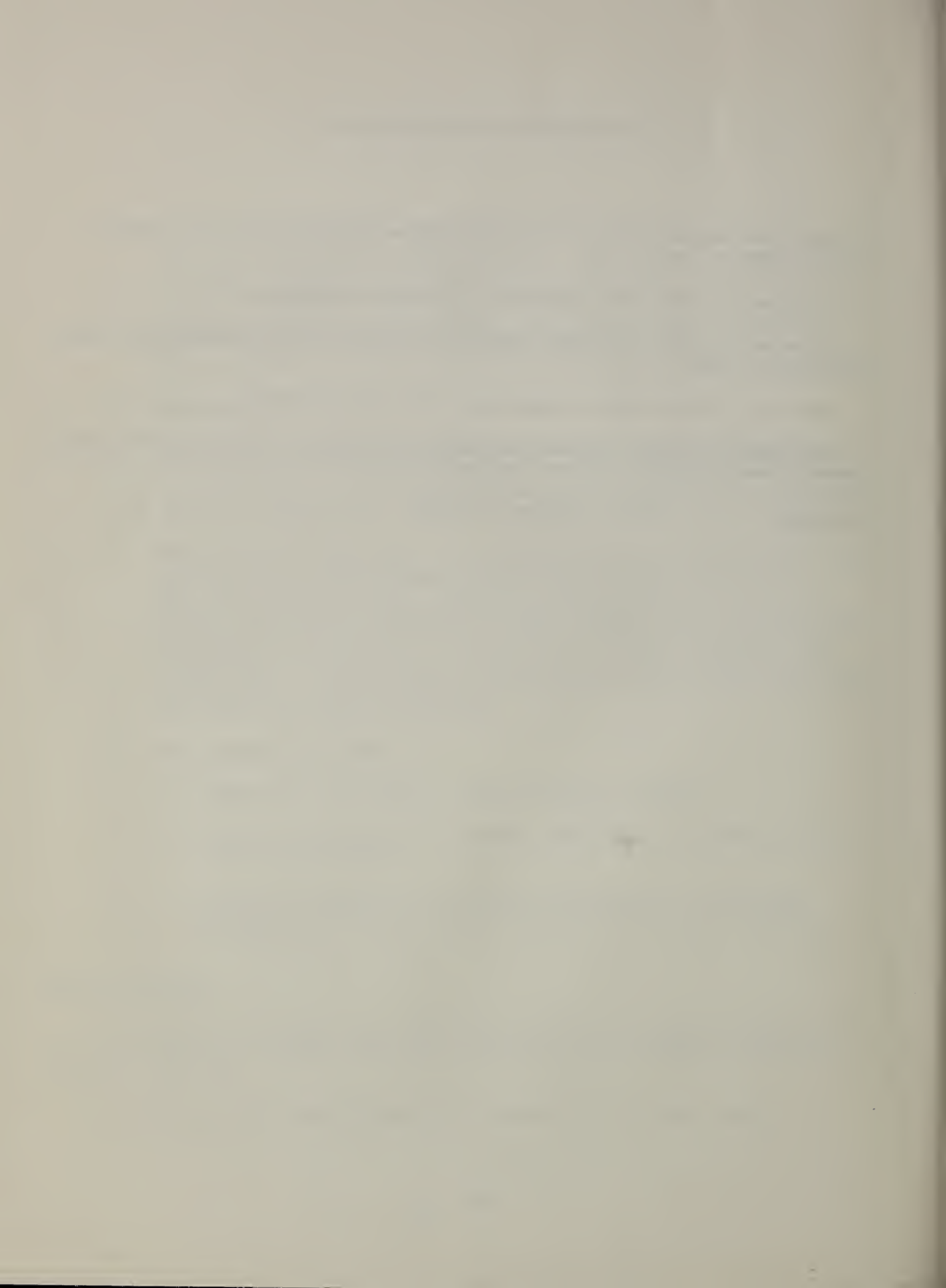
It helps to move young men around to broaden knowledge.

Students can use government research for thesis if arrangements are worked out ahead of time.

Pre-runs of talks given at meetings are a good practice.

Government employees can act as graduate advisors but should guard against becoming overloaded with such activities.

RECORDERS: L. L. Madsen, Herbert F. Miller



ADMINISTRATIVE SERVICES

MODERATOR

John W. Rockey

PANEL MEMBERS

F. R. Mangham
John B. Holden
Stanley P. Williams

DIGEST OF TALKS

Mr. Mangham: The Office of Plant and Operations is responsible for serving the agencies of the Department in two major areas: records management and real estate.

Records Management - This is a system of records administration to effect the orderly creation, utilization, and disposition of records. The Records Act of 1950 authorizes and requires agencies to establish and maintain a records management program and to dispose of records which are of no further value.

Disposition Schedules already prepared and in use permit the destruction of approximately 90% of the Government's records after specified periods of time. It is estimated that 10% of our records are worth permanent retention as a history of our activities. The remainder should be destroyed within ten years.

The Challenge is (1) to limit the creation of records to those of real value by consciously avoiding duplication by other units and by excluding personal-type items and extra copies from official files; (2) to dispose of the approximately 90% of records as scheduled; and (3) to develop methods of cooperation between administration people and professional people that will eliminate much paper work.

The staff of the Office of Plant and Operations is available for advisory services and assistance in developing guidelines for the creation, utilization, and disposition of records.

Space requirements should be planned jointly by administration and program people with as much care and thought as is given to preparation of budgets. For maximum economy and usefulness, space must be designed for specific purposes - offices, laboratories, etc. - and must provide proper lighting, ventilation, and arrangement. Planners should be alert to new ideas. It is often cheaper to construct new buildings than to renovate old ones. New construction should be designed with movable partitions to provide greater adaptability of space for different types of work.

ADMINISTRATIVE SERVICES

John B. Holden: The Division of Procurement and Property Management is responsible in the Department for leadership in the fields of purchasing and property management, including the formulation of policies and procedures and coordination between agencies. The division develops purchasing programs and techniques, prepares specifications, provides inspection and testing services, delegates contracting and purchasing authority to agencies, and manages property utilization, disposition, and accountability programs.

Four major areas are involved:

1. Open Market purchases, those amounting to less than \$500, can be most efficiently handled locally by field offices through the use of simplified purchasing methods such as "blanket" orders, charge accounts, petty cash, and over-the-counter transactions (SF 44).
2. Contracting authority, when decentralized to agencies and within agencies, results in less confusion and speeds procurement more efficiently than when centralized.
3. Excess Property utilization within the Department is an example of good management. The seven Area Equipment Committees last year cleared property valued at \$1,800,000, of which about 35% was redistributed within Agriculture.
4. Motor Vehicles number 21,000 in USDA, of which 3,700 are passenger cars - more than any other civilian agency. Passenger vehicles alone travel 46,000,000 miles a year. Any improvement in coordination between agencies and greater utilization of fewer vehicles, adds up to real savings.

Supply Planning should be made a part of the budget planning to assure (1) that adequate supplies and equipment will be available when needed to carry out authorized programs, and (2) that orderly and efficient purchasing techniques may be employed. Joint effort between program and administrative people is necessary for efficiency and economy.

Stanley P. Williams: The principal aims and objectives of the Administrative Services Division are to relieve program people of administrative chores and to help the Administrator live within applicable laws and regulations while carrying out authorized programs.

ADMINISTRATIVE SERVICES

Recent reorganization of ARS brought a host of new problems. Time and circumstances have not favored the division's program. To be organized for best performance in the area of administrative services, it is important that management and program staff get acquainted and understand each other's problems and aims.

Principal activities of the division center around procurement, property management, records management, real estate, and contracting including research contracts, cooperative agreements, and memoranda of understanding. Some statistics show that ARS has 1,069 field stations; 360,000 acres of land valued at \$2,500,000; structures valued at \$40,000,000; personal property worth \$27,000,000; 75,000 cubic feet of records held in 12,500 file sections. In 1954 more records were created than were disposed of.

GROUP DISCUSSION: Discussion centered around practical problems being encountered in current activities, mostly within ARS.

Administrative Services division, ARS, is staffed to prepare cooperative agreements and contracts in final form, based on information furnished by the interested branch. Sufficient details should be included in final draft of agreements to identify the branch and lines of work covered, purpose, and intent of the agreement. Cooperation between agencies of USDA usually does not require a cooperative agreement but merely an exchange of correspondence. Congressional limitations require that a certain amount of research work be carried out under contract.

Under some conditions providing storage space for motor vehicles is uneconomical when the cost of storage is weighed against added depreciation and other hazards resulting from outside storage.

In the matter of motor vehicle "pools" seasonal operations in Agriculture are a real problem. By coordination between agencies at some locations where not all work is seasonal or where peak periods vary between agencies, substantial savings have been effected. Motor pools that may be established as a result of P. L. 766 must prove more economical or be abandoned. Special-use vehicles are excluded from pools so as not to impair programs.

Various specific questions on procedure and regulations were discussed, such as the requirement for periodic space reports, disposal of excess

ADMINISTRATIVE SERVICES

or unserviceable property, purchases from GSA supply centers and Federal Supply Schedules, etc. Discussion showed that an understanding of what laws and regulations do allow, rather than what is not permitted, is usually all that is needed to solve most problems. Deviation from almost any rule is allowable under justifiable circumstances.

RECORDERS: Paul R. Miller, R. A. Carlson, L. W. Modlin

RESEARCH SUPERVISION

MODERATOR

Lloyd A. Spindler

PANEL MEMBERS

Dr. Orr E. Reynolds

Dr. A. H. Moseman

Dr. H. L. Haller

DIGEST OF TALKS

Dr. Reynolds: Dr. Reynolds reported on a study of supervision of research made for the Office of Naval Research by the Institute of Human Relations of the University of Michigan. Some of the results were:

Supervision can be classified at four levels:

1. Worker is completely unsupervised.
2. Worker and supervisor jointly decide the course of the work.
3. Supervisor plans the work in consultation with the worker.
4. Supervisor plans the work alone, without the advice of the worker.

Research productivity varies inversely with the amount of supervision.

One of the dominant attributes of a scientist is his desire for freedom to make his own decisions. According to a survey of attitudes, scientists feel that:

In academic work, 75% of the scientists are free to plan their own work.

In industry only 23% of the scientists are free to plan their own work.

In government 38% of the scientists are free to plan their own work.

Scientists as a group do not favor a high degree of supervision.

Physiologists are also against administration and, at the same time, deplore the results due to lack of administration.

RESEARCH SUPERVISION

How the Office of Naval Research Recruits Research Workers

1. Sponsor symposia in order to get scientists who are interested to attend.
2. Send out reports of work to stimulate further thinking.
3. Exchange information.
4. Visit research laboratories of contractors and help the workers with suggestions.

Handling of Research Proposals

1. Program directed through regional offices.
2. Visits by scientific experts to the laboratories of the proponents.
3. Acknowledge receipt of proposals.
4. Obtain advice on proposal from committees set up for this purpose.
5. Advise proponent as to decision on proposal.
6. If proposal is accepted the scientific expert again visits laboratory to discuss the project.

Through all of this it is apparent that the administration of the program is centralized but that assistance comes from the geographic regional representative.

Dr. Moseman: Dr. Moseman defined research supervision as the guiding of a combined scientific effort towards the effective solution of a scientific problem.

An example of such a program is: Research in wheat improvement. Some of the disciplines involved in this are: genetics, plant pathology, entomology, agronomy, plant physiology and biochemistry. This program is nationwide in scope and involves cooperation at all levels.

Supervision of Research Factors

1. Organization
 - a. By discipline - not all disciplines in an area.

RESEARCH SUPERVISION

- b. By class of wheat - specific regions.
- c. Personnel - regional project leaders.
 - (1) Cooperation with local people and departments at experiment stations.
- 2. Supervisory Personnel at four levels
 - a. Individual scientists who stick to main line of problem.
 - b. Regional leader.
 - c. Special disciplines leader.
 - d. Over-all supervisor or project leader.

Attributes of the Supervisory Personnel

- 1. Regional Leader - should be a competent scientist, active in his line of work, recognize other disciplines, recognize problems in each discipline, provide means for an exchange of ideas and maintain good cooperative arrangements.
- 2. Special Disciplines Leader - should be a key scientist in his field, serve as coordinator, guide the progress of the work and stimulate research.
- 3. Project Leader - is similar to the regional leader and in addition integrates between regions and disciplines.

Maintenance of an Environment for Scientific Output

- 1. Permit individual scientist to delve deeply rather than broadly.
- 2. Minimize the amount of necessary paper work.
- 3. Orders should come from only one business office.

Mechanics of Research Supervision

- 1. Job descriptions.
- 2. Project outlines.
- 3. Project reports - should be periodic but not too frequent - should serve as the bible for the project.

RESEARCH SUPERVISION

4. Work conferences.
5. Contacts with research workers.

Dr. Haller: Dr. Haller discussed intensive supervision as gained from his personal experiences. Assuming a GS-5 or GS-7 is just starting in the U. S. Department of Agriculture, he should be properly welcomed and oriented as to the functions of the group he will work with, meet the personnel on the job, and learn the relationship of his job to others in the same line of work. He should be indoctrinated on the job and he should receive specific duties. To make his work more efficient, all pertinent reports should become available to him. Supervision should be close and immediate with the idea of aiding, teaching, and encouraging him. As the individual becomes acclimated, the amount of supervision should be reduced.

Publication of Research Results

1. Encourage individual to publish under his own name if he has worked alone.
2. Project leader should not be joint author on all publications.
3. Use same form of author's name in all publications.

Supervisors should not be classified or receive remuneration according to the number of people supervised, but rather on the nature and complexity of research problem supervised. Regimentation of research workers should be avoided, instead freedom should be granted. Each worker should be judged separately on his own merits.

GROUP DISCUSSION

Dr. Lloyd Spindler, the moderator, summarized and elaborated some of Dr. Haller's remarks and emphasized the individual characteristics of research workers. He pointed out that the supervisor must recognize and take advantage of the various qualities of different workers.

RECORDERS: M. H. Neustadt, William L. Sulzbacher

INFORMATION

MODERATOR

Walter H. Hodge

PANEL MEMBERS

R. Lyle Webster
E. G. Moore

DIGEST OF TALKS

Mr. Webster: Dissemination of information is an important part of the research work. It not only provides useful facts for the public but serves to keep it informed of the extent and principles of Government research operations. Information people function as middlemen between research scientists and consumers, e.g. farmers and the general public. Extension people serve as middlemen between the Office of Information and the States.

Since publications are the backbone of the Information service, a publications review committee has been established in each agency. The committee will make recommendations for popular publications. Plans call for short, well illustrated publications. To prevent duplication closer cooperation is required between USDA and Land Grant Colleges in planning research.

To promote efficiency, the centralization of photography and graphics has recently been effected.

The Information Service maintains a large staff to carry out the following functions:

Documents resulting from the various activities of the USDA, in research, extension, marketing, and credit services are put in understandable form for the farmer or user, and the information is adapted to various channels of communication such as press, television, radio, bulletins, motion pictures, and exhibits.

Timely information is prepared specifically for motion picture and television, thus taking advantage of the vast opportunities for visual presentation of research.

Information and Extension have separate functions. The Office of Information covers and reports USDA activities. Extension uses the information in carrying out programs.

Mr. Moore: The primary function of the Information Division is to acquire and distribute information on agriculture. Over \$600,000 is now being spent for this service, approximately \$400,000 of which is for salaries and about

INFORMATION

\$225,000 for printing. The total amount spent by this Division is less than one percent of the current ARS appropriation.

The methods of making information available fall into several categories, each requiring special treatment.

1. Scientific papers by the researchers in specific subject matter Journals.
2. Department publications for agricultural leaders, vocational teachers, industry and trade organizations.
3. Review articles for Trade and Farm Journals.
4. Two or three hundred farm journals containing USDA findings edited primarily for the farmer.
5. Approximately four hundred radio and television stations presenting the results of research of the Department to the public.
6. Speeches, movies, and exhibits for farm organization meetings.

Additional salient points emphasized:

Researchers need to be more concerned with their responsibility to provide information in usable form to the Extension Service. The Information Division has organized a small group with responsibility for preparing and submitting material to Extension people. This is the principal new activity since the reorganization of the Department.

More information should be prepared especially for urban people. To illustrate, the bulletin "More and better foods for pay checks," was shown.

The announcement was made that the Comptroller has given authority to use official funds to pay overcharges for journal publications, thus relieving the USDA scientist from this financial obligation when articles exceed the length acceptable to the journal.

Funds are being provided to the Motion Picture Office for the production of movie shorts for television programs.

An important function of the Information Division is the preparation of appropriate speeches for Department officials.

INFORMATION

GROUP DISCUSSION

Additional points brought out in this period are noted below:

1. Funds allotted to the Information Division are not available for purchase of reprints. The cost of reprints is borne by Branches.
2. If a manuscript cannot be reduced in size acceptable to the journal, such cost may be covered by the Branch.
3. In response to an inquiry, the recommendation was made that a member of the research staff or field man of ARS not write articles solicited by Trade Journals.
4. The Technical Review Section is not available for editing of articles for outside publication.
5. The Section Head and Branch Chief are responsible for the contents of articles appearing in non-Departmental publications.
6. Government employees may accept pay for articles prepared on the individual's own time so long as the article does not infringe upon the rights of others or reflect discredit on the Department. All such articles must be cleared within the Department.
7. It was proposed that time spent in responding to requests for information might be reduced by providing more short, precise bulletins.
8. In answer to a question regarding distribution of Department publications, the point was made that lists of people and organizations interested in various subject matter fields are on file in the Information Division for the specific purpose of sending pertinent articles, when published.
9. Discussion concerning duplication of bulletins by Experiment Stations and USDA revealed that if a State has a bulletin of regional value and is willing to provide copies for neighboring States, the Information Division certainly approves. If State legislatures do not appropriate funds to purchase bulletins, then cooperation may be extended by the Information Division of ARS.

RECORDERS: W. C. McDuffie, Margaret Towell Goldsmith

RESEARCH COORDINATION

MODERATOR

Marion W. Parker

PANEL MEMBERS

Dr. M. A. Farrell
Dr. Erwin C. Elting
Dr. Sherman E. Johnson
Dr. Barnard D. Joy

DIGEST OF TALKS

Dr. Farrell: Coordination was defined as providing means of cooperation through organization.

The purposes of coordination in the broad field of agricultural research were stated as follows:

1. To avoid unnecessary duplication. (Duplication is sometimes necessary to speed up job, get data in different environments, etc.)
2. To obtain maximum sum of information from any one investigation.
3. To enable research to advance more rapidly on a broad front.
(Example - regional projects with each station taking segment of problem they are best qualified to pursue.)
4. To provide maximum use of facilities.
5. To avoid inter-departmental and inter-family squabbles and contradictory recommendations and publications.
6. To stretch research dollar as far as possible.

Five possible classes of coordination were discussed as follows:

1. Inter-departmental.
2. Inter-college (within a university).
3. Inter-institution.
4. Between State Experiment Stations and U. S. Department of Agriculture.
5. Between State Experiment Stations and industry.

RESEARCH COORDINATION

Emphasis was placed on the need for coordination both horizontally and vertically between individuals and institutions and the need to encourage research scientists to cooperate. Among the means of achieving coordination that were cited were committees, conferences, workshops and, at the scientist's level, informal meetings.

Dr. Elting: The speaker stated that FY-1955 Federal appropriations for Agricultural research amounted to over \$70,000,000 (including \$19,000,000 Federal grants to States). State appropriations and other state funds amounted to about an equal amount and industry also budgeted about \$140,000,000 for agricultural research. It was stated that Congress was interested in preventing unnecessary duplication and that the National Science Foundation was supposed to coordinate research.

The research project was cited as the focal point for coordination and the project outline as the guide to planning. Over 12,000 project outlines are on file at the Office of Experiment Stations, about 5,000 of which are supported by Federal funds. The remainder are state-supported projects which are kept on file for reference purposes. All projects submitted are compared with those in progress to bring attention to duplication and to disclose related work of interest. The Research and Marketing Act added impetus to cooperation. Coordination is accomplished through joint planning.

The speaker traced the processes by which regional research projects are developed.

Dr. Johnson: Coordination was defined as a means for achieving cooperation. It is necessary for accomplishment of a program.

Coordination must begin with planning of the project. All persons interested in the project must be included to cover all angles of the problem.

Early coordinated planning should be encouraged by the Administrator. Team work should be encouraged. It is the Administrator's responsibility to give approval and encouragement to the researcher, and to allocate the budget in such a way that agents have funds to work along with their cooperators.

State and Federal cooperation is desirable, but is voluntary. It is to the mutual interest and advantage of both parties to cooperate. Cooperative research is more efficient than independent work.

RESEARCH COORDINATION

Dr. Joy: The speaker stated that the best research workers are those who do not need to be coordinated, but who coordinate naturally of their own accord.

Three essentials for coordination are:

1. Initiative. Workers must have ideas, be widely informed about related fields, and be acquainted with workers doing other work.
2. Rules of order: Should have informal discussion in order to come to agreement before taking a formal vote. At the final stage proceed according to Roberts' Rules of Order.
3. Dissemination. There must be coordination between research and extension. The research worker should see that the results of his work are communicated to the extension worker.

GROUP DISCUSSION

The discussion centered around the various funds available to States such as regular Federal grants, state funds, contract funds, grants in aid and the advantages and disadvantages of contract work. It was pointed out that States would not generally be interested in contract work unless they had a mutual interest in the problem. An advantage to the government of contract work was that it did not obligate itself by building up a staff and that personnel procurement for the work was not restricted by Civil Service requirements. A disadvantage of cooperative work that needed to be guarded against was excessive supervision.

RECORDERS: Harold T. Cook, Avis M. Woolrich



